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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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INTELLECTUAL PROPERTY / TECHNOLOGY LAW			HAYES, BRET C	
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RESEARCH TRIANGLE PARK, NC 27709			3644	

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/662,193	MESHIRER, MILTON S.
	Examiner Bret C Hayes	Art Unit 3644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on _____.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-34 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
 5) Claim(s) 32 and 33 is/are allowed.
 6) Claim(s) 1-32 and 34 is/are rejected.
 7) Claim(s) ____ is/are objected to.
 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claim 34 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 34 recites “the applied sealant composition is non-capillarily active,” which is not enabled as the height h in meters of a

liquid column is given by:
$$h = \frac{2T \cos \theta}{\rho g r} ; \text{ where}$$

T = interfacial surface tension (N/m)

θ = contact angle

ρ = density of liquid (kg/m³)

g = acceleration due to gravity (m/s²).

3. Since Applicant has not disclosed that the sealant composition lacks any surface tension whatsoever, and since that would be the only way – barring a 0° contact angle, a zero-density liquid, zero-gravity, and a 0 meter radius column – to achieve non-capillary action, it is not enabled.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 4 – 8, 10 – 15, 24 and 29 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Statutory Invention Registration No. H1350 to Desmond et al. (*Desmond*) in view of US Patent Application Publication No. US 2004/0069177 A1 to Klein.

6. Re – claims 1 and 29 – 31, Desmond discloses the invention substantially as claimed including: a process for manufacturing an ammunition article comprising providing a cartridge 20 including a projectile disposed in a casing, as seen in FIGS. 9 – 15, for example, and presenting a joint between the projectile and the casing; and applying to the joint a sealingly effective amount of sealant composition, see Title, Abstract, etc. However, Desmond does not disclose the sealant being a light-curable sealant and exposing the applied sealant composition to curingly effective light. Klein teaches that it is known in the art of ammunition article manufacturing to apply UV or ultraviolet light curable sealant composition and exposing the applied sealant composition to curingly effective light, as set forth beginning at [0027] – [0030], for the purpose of sealing a propellant charge. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond to include the sealant technology as taught by Klein in order to seal a joint.

7. Re – claim 4, Desmond in view of Klein discloses the claimed method. Desmond further discloses applying to the joint the sealingly effective amount of sealant composition involving relative motion of the cartridge and an applicator dispensing the sealant composition to the joint, see col. 6, line 54 (6:54) – col. 7, line 52 (7:52).

8. Re – claim 5, Desmond further discloses the cartridge being motively translated in relation to the applicator, see above.

9. Re – claim 6, Desmond in view of Klein discloses the claimed invention except for the applicator being motively translated in relation to the cartridge. It would have been obvious to one having ordinary skill in the art at the time the invention was made to so reverse the operation, since it would require a mere reversal of the moving parts, and, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Einstein*, 8 USPQ 167.

10. Re – claim 7, Desmond discloses the applicator comprising an application device selected from the group consisting of syringe pump dispensers, roller coaters, doctor blades, hypodermic needle dispensers, and liquid-fed transfer devices, see above.

11. Re – claim 8, Desmond discloses the sealant composition comprising a liquid sealant and the applicator comprising a liquid-fed transfer device selected from the group consisting of liquid-fed brushes, sponges, swabs, pads, and cuffs, coupled in dispensing relationship with a reservoir for supply of the liquid sealant, see FIGS. And citations above.

12. Re – claims 10 and 11, Desmond in view of Klein discloses the claimed invention, see citations above – UV or ultraviolet.

13. Re – claim 12, Desmond in view of Klein discloses the claimed invention except for explicitly stating the ultraviolet light has a wavelength in a range of from about 220nm to 375nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the wavelengths of from about 220nm to about 375nm, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ

233. In this case, since Klein teaches UV light and the range of UV light is generally accepted to be from (extreme or vacuum UV) 10nm – 200nm and (near UV) from 200nm – 380nm.

14. Re – claims 13 and 14, Klein teaches the light being supplied by a source including a light-generating component selected from the group consisting of lamps, LED's, photo-luminescent media, down-converting and up-converting materials that respond to incident radiation in one electromagnetic spectral regime and responsively emit radiation of a longer or shorter wavelength, respectively, electro-optical generators, and lasers, as cited previously.

15. Re – claim 15, Desmond in view of Klein discloses the claimed invention as applied above, except for the sealant composition after exposure to the curingly effective light (actinic radiation: radiant energy causing chemical changes, such as in photography) not fluorescing. It would appear that this is the norm within the prior art. The only references to any light-curable compositions fluorescing is by way of the addition of a pigment or dye, which itself does the fluorescing – see US Patent Nos.: 6,460,464 B1 to Attarwala, col. 3, line 54; and 6,284,813 B1 to Leppard et al., col. 17, line 54, as previously cited, for example. If fluorescence after actinic radiation exposure were the default state of the composition, one would be lead to believe that it would at least be given mention in the prior art as being so. Since the prior art teaches the addition of pigments and/or dyes to create fluorescence, it would appear that such is not the case and it would then be inherent that the composition would not fluoresce after exposure to actinic radiation.

16. Re – claim 16, Klein teaches the use of a photo-curable resin selected from the group consisting of unsaturated polyesters, epoxies, (meth)acrylates, urethane (meth)acrylates, (meth)acrylic ester monomers, oligoester acrylate-based compounds, epoxy acrylate-based

compounds, polyimide-based compounds, aminoalkyd-based compounds, and vinyl ether-based compounds.

17. Re – claim 17, Klein teaches the light-curable sealant composition comprises a photo-curable resin selected from the group consisting of bisphenol epichlorohydrin epoxy resins, acrylic resins, urethane acrylate resins, acrylated polyester resins, and cycloaliphatic epoxides.

18. Re – claim 18, Klein teaches a photo-curable resin and a photo-initiator therefore, see [0028], for example.

19. Re – claims 19 – 21, Desmond in view of Klein discloses the claimed invention. Since free-radicals and cationic species play a significant role in chemical reactions – including polymerization, for example – the selection of these would be obvious to one having ordinary skill in the art at the time the invention was made, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

20. Re – claim 22, Desmond in view of Klein discloses the claimed invention. Since monomers are known to be used in the manufacture of polymers and since diluents are known to be used to dilute a liquid to lower its viscosity, a monomeric diluent would be obvious to one of ordinary skill in the art at the time the invention was made as normal additions.

21. Re – claim 23, Desmond in view of Klein discloses the claimed invention including a neat formulation of resin and photo-initiator.

22. Re – claim 24, in view of claim 15 above, it would be obvious to one of ordinary skill in the art at the time the invention was made to include a dye as taught by the prior art.

23. Claim 3 is rejected under 35 U.S.C. § 103 as being unpatentable over Desmond in view of Klein in view of US Patent No. 4,359,370 to De La Mare et al. (De La Mare).

24. Desmond in view of Klein discloses the invention substantially as claimed as applied above. However, Desmond in view of Klein does not disclose the light-curable sealant composition being light-cured by exposure to the curingly effective light for an exposure time in a range of from about 0.01 to 0.5 seconds. De La Mare teaches exposure time in a range of from about 0.001 seconds to about 2.5 seconds, set forth at col. 8, line 59, in the same field of endeavor for the purpose of radiating with UV. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the exposure time as taught by De La Mare in order to cure UV-curable sealant compositions.

25. Claims 16 – 23 and 25 – 28 are rejected under 35 U.S.C. § 103 as being unpatentable over Desmond in view of Klein in view of US Patent No. 6,284,813 B1 to Leppard et al. (Leppard), previously cited above.

26. Re – claim 16, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a photo-curable resin selected from the group consisting of unsaturated polyesters, epoxies, (meth)acrylates, urethane (meth)acrylates, (meth)acrylic ester monomers, oligoester acrylate-based compounds, epoxy acrylate-based compounds, polyimide-based compounds, aminoalkyd-based compounds, and vinyl ether-based compounds. Leppard teaches a light-curable sealant composition comprising a photo-curable resin selected from the group consisting of unsaturated polyesters – see col. 12, line 23, for example, epoxies – see col. 12, line 20, for example, (meth)acrylates – see col. 12, line 1, for

example, urethane (meth)acrylates – see col. 18, line 30, for example, [note: Leppard teaches *poly*-urethane methacrylates, but the use of polyurethane for urethane and vice versa is predominately interchangeable in the art], (meth)acrylic ester monomers – see col. 12, lines 36 – 48, for example, oligoester acrylate-based compounds – see col. 13, line 30, for example, epoxy acrylate-based compounds – see col. 12, line 20, for example, polyimide-based compounds – see col. 19, line 59, for example, aminoalkyd-based compounds – see col. 12, line 1, for example, and vinyl ether-based compounds – see col. 12, line 7, for example, in the same field of endeavor for the purpose of making a photo-initiator and photo-initiator mixtures capable of curing photopolymerizable compositions, set forth at col. 1, line 15. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the light-curable sealant composition comprising a photo-curable resin selected from the group consisting of unsaturated polyesters, epoxies, (meth)acrylates, urethane (meth)acrylates, (meth)acrylic ester monomers, oligoester acrylate-based compounds, epoxy acrylate-based compounds, polyimide-based compounds, aminoalkyd-based compounds, and vinyl ether-based compounds as taught by Leppard in order to make a photo-initiator and photo-initiator mixtures capable of curing photo-polymerizable compositions efficiently.

27. Re – claim 17, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a photocurable resin selected from the group consisting of bisphenol epichlorohydrin epoxy resins, acrylic resins, urethane acrylate resins, acrylated polyester resins, and cycloaliphatic epoxides. Leppard further teaches light-curable sealant composition comprising a photo-curable resin selected from the group consisting of bisphenol epichlorohydrin epoxy resins – see col. 12, lines 13 and 54, for example, acrylic resins

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– see col. 12, lines 36 – 48, for example, urethane acrylate resins – see col. 18, line 42, for example, acrylated polyester resins – see col. 26, line 26, for example, and cycloaliphatic epoxides – see col. 12, line 50, for example, in the same field of endeavor for the same purpose indicated above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the light-curable sealant composition comprising a photocurable resin selected from the group consisting of bisphenol epichlorohydrin epoxy resins, acrylic resins, urethane acrylate resins, acrylated polyester resins, and cycloaliphatic epoxides for the same reason indicated above.

28. Re – claim 18, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a photo-curable resin and a photo-initiator. Leppard further teaches the composition comprising a photo-curable resin and a photo-initiator, set forth throughout and at col. 20 lines 36 – 48, in the same field of endeavor for the purpose of coating. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the composition comprising a photo-curable resin and a photo-initiator as taught by Leppard in order to coat.

29. Re – claims 19 – 21, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a formulation selected from the group consisting of free-radical curable acrylate resin-based formulations, and cationically curable epoxy-based formulations. Leppard further teaches a light-curable sealant composition comprising a formulation selected from the group consisting of free-radical curable acrylate resin-based formulations, and cationically curable epoxy-based formulations, as set forth at col. 18, line 64, for example, in the same field of endeavor for the purpose indicated above. It would

have been obvious to one having ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the light-curable sealant composition comprising a formulation selected from the group consisting of free-radical curable acrylate resin-based formulations, and cationically curable epoxy-based formulations as taught by Leppard for the reason indicated above.

30. Re – claim 22, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a monomeric diluent. Leppard further teaches the light-curable sealant composition comprising a monomeric diluent, as set forth at col. 19, line 52, in the same field of endeavor for the purpose indicated above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the monomeric diluent as taught by Leppard for the reason indicated above.

31. Re – claim 23, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a neat formulation of resin and photo-initiator. Leppard further teaches the light-curable sealant composition comprising a neat formulation of resin and photo-initiator, as set forth at col. 19, line 63, in the same field of endeavor for the purpose indicated above. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the neat formulation of resin and photo-initiator as taught by Leppard for the reason indicated above.

32. Re – claim 25, Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition comprising a photo-initiator in a concentration not exceeding 5% by weight. Leppard further teaches the light-curable sealant composition comprising a photo-initiator in a concentration not exceeding 5% by weight*, as set forth at col. 26, line 11, in

the same field of endeavor for the purpose indicated above. *Leppard teaches the photo-initiator in a concentration not exceeding 5%, but does not explicitly state "by weight" at that citation. However, further on, Leppard teaches "by weight" as set forth at col. 29, line 15. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the photo-initiator in a concentration not exceeding 5% by weight as taught by Leppard for the reason indicated above.

33. Re – claims 27 and 28, Desmond in view of Klein discloses the claimed invention except for a tensile force required to separate the projectile from the casing being no more than 10% or 5% greater than a tensile force required to separate the projectile from the casing in an absence of light-curable sealant composition. It would have been obvious to one having ordinary skill in the art at the time the invention was made to require tensile force to separate the projectile from the casing be no more than 10% or 5% greater than a tensile force required to separate the projectile from the casing in an absence of light-curable sealant composition, since it was known in the projectile art that separation tensile force must remain below a certain level in order to prevent backfiring of the ammunition.

34. Claim 26 is rejected under 35 U.S.C. § 103 as being unpatentable over Desmond in view of Klein in view of US Patent No. 6,017,973 to Tamura et al. (Tamura).

35. Desmond in view of Klein discloses the claimed invention except for the light-curable sealant composition having a viscosity in a range of from about 75 to 1000 centipoise (cps) at 25° C. Tamura teaches a light-curable composition having a viscosity in a range of around 100 to 100,000 centipoise (cps) at 25° C, set forth at col. 14, line 2, in the same field of endeavor for the purpose of making a photo-curable resin composition for the purpose of adjusting the photo-

curable resin to its application or mode of use. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Desmond in view of Klein to include the range of from about 75 to 1000 centipoise (cps) at 25° C as taught by Tamura in order to adjust the photo-curable resin to its application or mode of use. Also, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include the range of from about 75 to 1000 centipoise (cps) at 25° C, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Also, *In re Peterson*, 65 USPQ2d 1379.

Response to Arguments

36. Applicant's arguments with respect to the previously rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

37. Claims 32 and 33 are allowed.

38. Claims 2 and 9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

39. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither discloses nor fairly teaches the recited limitations of the claimed invention including, but not limited to: a force of between 45 and 200 pounds being required to be applied to separate the projectile from the casing.

40. This statement is not intended to necessarily state all the reasons for allowance or all the details why the claims are allowed and has not been written to specifically or impliedly state that all the reasons for allowance are set forth (MPEP 1302.14).

Conclusion

Any inquiry concerning this communication should be directed to Bret Hayes at telephone number (703) 306 – 0553. The examiner can normally be reached Monday through Friday from 5:30 am to 3:00 pm, Eastern Standard Time.

If attempts to contact the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu, can be reached at (703) 305 – 7421. The fax number is (703) 872 – 9306.

bh

11/15/04



**TERI PHAM LUU
SUPERVISORY
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